## DOCKET O#-AAER-1 POÁTE OCT 2 7 2004

## Updated Energy Savings Analysis for Title 20 Standards Development Analys Standards Options For Single-Voltage External AC to DC Power Supplies

October 27, 2004 Suzanne Foster, Ecos Consulting

A number of slight modifications to the proposed language of the standard warranted a revised energy savings estimate for the Tier 1 portion of the standard. These revisions (from the CASE report dated May, 3 2004) include:

- 1) The inclusion of ac-ac power supplies in the definition of the products to be covered by the standard
- 2) The inclusion of external power supplies with output power up to 250 watts in the definition of products to be covered by the standard
- 3) The exclusion from of some battery charger products that have indicator lights and chemistry type selector switches from the definition of products to be covered by the standard
- 4) The increase of the stringency of the standard to harmonize with ENERGY STAR's voluntary standard going into effect in late 2004 or early 2005.

Changes to the definition of products to be covered (items 1 through 3 above) are not quantifiable in the time allotted for this revised savings estimate because it would require deviating significantly from the methodology originally used to generate the market information. At the same time, items 1 through 3 are likely to have a minimal effect on the overall energy savings. Items 1 through 3 were primarily added to a) harmonize with international efforts and b) more clearly define the definition of the products covered by the standard. Items 1 and 2 will likely increase the energy savings under this standard and item 3 will likely slightly decrease the energy savings. We suspect that these three effects would either cancel out, changing the energy savings estimate not at all, or would result in a slight increase in the energy savings.

Item 4 is quantifiable and increases the energy savings by roughly 8% overall in first year savings under Tier 1 of the standard (Increase from 129.7 GWh to 140.7 GWh in the first year). Please see spreadsheet entitled "CEC Power Supply Standards Savings Estimate6 Tier1.xls" There are no quantifiable changes to the savings estimates in Tier 2 of the standard although the same qualitative arguments associated with items 1 through 3 are applicable.

Table 1: Revised Energy Savings Estimates for Tier 1 External Power Supply Standard

		<b></b>						
Power Supply Output Power (Watts)	Lifetime (years)	Average Annual Unit Energy Saving (kWh)	Un	nnuai it Cost ivings	Sales in CA	Total First Year Energy Savings During one year of sales (GWh)		Simple Payback (years)
<2.5	5	1.96	\$	0.22	3.40	6.7	\$0.30	1.39
2.5-<4.5	5	3.17	\$	0.35	3.40	10.8	\$0.30	0.86
4.5-<6	5	2.99	\$	0.33	4.60	13.8	\$0.40	1.22
6-<10	5	4.25	\$	0.47	4.70	20.0	\$0.50	1.07
10-<24	5	6.87	\$	0.76	5.40	37.1	\$0.63	0.83
>24	5	8.73	\$	0.96	6.00	52.4	\$0.80	0.83
Total					27.5	140.7		

	5.698394102	60.6334743	66.3318684						-			
	3.812402208	40.6948069	44.5072091		155.56	0.8	154.7					
	1.962750023	13.5535846	15.5163346		61.84	1.2	60.6					
	2.219199479	15.5456158	17.7648152		41.05	0.4	40.7					
	1.394841419	4.404915	5.79975642		-14.36	0.8	13.6					
fect	Annual kWh/unit standard in effect	Annual kWh/u	Annual kWh/u		16.10	0.6	15.5					
					5.37	1.0	4.4	-	_			a dead on a second
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							-					
_ 				140.7	28.5	112.2	27.5		<u> </u>			Total
	\$0.80	8%	\$10.00	52.4	10.2	42.2	- 6.00	0.96	8.73 \$	8	5	>24
	\$0.63	9%	\$7.00	37.1	6.3	30.8	5.40	0.76	+	6	5	10-<24
1.07		10%	\$5.00	20.0	2.1	17.9	4.70		┿	4	ı o	6-<10
		10%	\$4.00	13.8	4.7	9.0	4.60	1	+	2	ı o	4.5-<6
		10%	\$3.00	10.8	3.2	7.5	3.40		+	, w	ı o	2.5-<4.5
_	05.0\$	10%	\$3.00	6.7	1.9	4.7	3.40		┿		U	<b>\$2.5</b>
(years)	Cost	Increase	Base Cost	(GWh)	(GWh)	(GWh)	(millions)	Į.	-	Saving (kWh)	(years)	(Watts)
Pavback	Incremental	% Cost		year of sales	Load Mode	Mode	2003	Unit Cost		Unit Energy	Lifetime	Output Power
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			<u>.</u>	32%	19.2	28.5	\$16.09	146.3	102.5	10:	248.8	No Load
			8.5	44%	19.4	112.2	\$48.95	445.0	25	4,854	5,299	Active
-			effect (MW)	during peak	Peak (MW)	(GWh)	\$)	GWh	effect		market	
			standard in	units on	units on at	in effect	(millions	savings	5	standard in	present	
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			Saved per		year with	savings	based on	California		ဂ္ဂ	annual	
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	0.853825	-				0.50225		Total	>101	1.7% 51 to 100	1.6% 21 to 50	1.5% 11 to 20	1.3% 6 to 10	ŝ	Watt bin	Old Darnell Bins rivised to reflect newer estimates calculated in "california pd>10-20			21.05	7.31	4.06	2.23	1.66			
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100%	1.66		1%	2.3	14%	2.0	30%	0.8	20%	1.14	15%	0	20%	2.5-<4.5	
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_	per Bin in Active	Average Watts	Fraction of	Watts at	Fraction of		Fraction of		Fraction of	Watts at	Fraction of	Watts at	Fraction of	Bi	
	Weighted Average Watts			Average	•	Average		Average		Average	,	Average		Output	
Total	Totals	100% Rated Load	100% R	ed Load	75% Rated Load	ed Load	50% Rated Load	d Load	25% Rated Load	oad	No Load	gged	Unplugged		Output